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**UNITED STATES DISTRICT COURT  
CENTRAL DISTRICT OF CALIFORNIA  
WESTERN DIVISION**

**UNITED STATES OF AMERICA,**

**Plaintiff,**

**vs.**

**ALEJANDRO SANDOVAL,**

**Defendants**

**CR 18 - 774 – JAK - 3**

**BRIEF FILED BY DEFENDANT  
ALEJANDRO SANDOVAL RE:  
DAUBERT HEARING AS TO DEFENSE  
EXPERT THERON VINES**

**TRIAL DATE: January 25, 2023**

**TIME: 9:00 a.m.**

**CTRM: HON. John A. Kronstadt**

**Defendant Alejandro Sandoval submits his brief to the Court following the  
Daubert hearing regarding defense expert Theron L. Vines III.**

**DATED: November 10, 2022**

**Respectfully Submitted,**

**By: \_\_\_\_\_/S/\_\_\_\_\_**

**GREGORY NICOLAYSEN  
Counsel for Defendant,  
Alejandro Sandoval**

**MEMORANDUM OF POINTS AND AUTHORITIES**

**I.**

**THE COURT SHOULD FIND THAT DEFENSE EXPERT  
THERON L. VINES III SATISFIES THE *DAUBERT* STANDARDS  
UNDER FED.R.EVID. 702 AND SHOULD THEREFORE DENY  
THE GOVERNMENT’S MOTION TO EXCLUDE MR. VINES’ TESTIMONY**

**A. Introduction**

On September 15 and 20, 2022, the Court conducted a *Daubert* hearing pursuant to the government’s prior motion to exclude the trial testimony of defense expert Theron L. Vines III (Pacer #665, filed May 25, 2022). In connection with the upcoming hearing, the defense filed the Declaration of Theron L. Vines III (Pacer #723, filed August 25, 2022) (“Vines Declaration”) which served as Mr. Vines’ direct examination for the *Daubert* hearing. Accordingly, references to evidence presented at the *Daubert* hearing include the Vines Declaration. The hearing commenced on September 15 with cross examination of Mr. Vines by government counsel.

As discussed in this brief, the *Daubert* hearing amply established Mr. Vines’ expertise as a DNA expert, specifically in regard to his application of a particular DNA testing methodology known as STRmix in conducting tests of items of evidence that are central to the government’s case-in-chief at trial. To the extent the government seeks to argue to the jury at trial that little weight should be given to Mr. Vines’ findings due to the condition of DNA samples available for testing, this position is a *trial argument* that has no bearing on the criteria applicable to a *Daubert* hearing. As discussed in this brief, the Vines Declaration and *Daubert* hearing have amply established that (1) Mr. Vines is qualified as an expert by knowledge, skill, experience, training, or education; (2) his testimony at trial is based on sufficient facts or data; (3) his testimony is the

1 product of reliable principles and methods, specifically the STRmix methodology; and  
2 (4) Mr. Vines has reliably applied the principles and methods of STRmix to the items  
3 of evidence he tested in this case.

4  
5 **B. Applicable Legal Standards**

6 Before allowing the jury to hear expert testimony, a district court must carry  
7 out its gatekeeping role to determine that the expert is testimony is admissible under  
8 Federal Rule of Civil Procedure 702. *See, Estate of Barabin v. AstenJohnson, Inc.*, 740  
9 F.3d 457, 467 (9th Cir. 2014) (*en banc*). “[T]he district court's gatekeeper role includes  
10 a preliminary assessment of whether the reasoning or methodology underlying the  
11 testimony is . . . valid and of whether that reasoning or methodology properly can be  
12 applied to the facts in issue.” *United States v. Valencia-Lopez*, 971 F.3d 891, 900 (9th  
13 Cir. 2020) (internal quotations and citation omitted) (alteration in original). “This  
14 prerequisite to making the Rule 702 determination that an expert's methods are  
15 reliable requires the district court to assure that the methods are adequately  
16 explained.” *Id.* (internal quotations and citation omitted).

17 Fed. R. Evid. 702(a) provides that an expert witness may testify at trial if the  
18 expert’s “specialized knowledge will help the trier of fact to understand the evidence or  
19 to determine a fact in issue.” A witness must be “qualified as an expert by knowledge,  
20 skill, experience, training, or education” and may testify if (1) “the testimony is based  
21 on sufficient facts or data,” (2) “the testimony is the product of reliable principles and  
22 methods,” and (3) “the expert has reliably applied the principles and methods to the  
23 facts of the case.” Fed. R. Evid. 702(b)-(d); *see also, Kumho Tire Co., Ltd. v.*  
24 *Carmichael*, 526 U.S. 137, 141, 148-49 (1999).

25 In *Daubert v. Merrell Dow Pharms., Inc.*, 509 U.S. 579 (1993) and *Kumho Tire*,  
26 the Supreme Court identified the following factors a court should use to determine  
27 whether the methods and principles employed by an expert are reliable: (1) whether  
28

1 the method “can be (and has been) tested;” (2) whether the method “has been  
2 subjected to peer review and publication;” (3) the method’s “known or potential rate  
3 of error;” (4) whether there are “standards controlling the technique’s operation;” and  
4 (5) whether the method has “general acceptance” within the “relevant scientific  
5 community.” Daubert, 509 U.S. at 592-94; Kumho Tire, 526 U.S. at 149-50. These  
6 factors are not exhaustive and the Rule 702 inquiry is “a flexible one.” Kumho Tire,  
7 526 U.S. at 149-50; Daubert, 509 U.S. at 594.

8 In addressing the flexibility of the inquiry, Daubert makes clear that expert  
9 testimony is liberally admitted under the Federal Rules. *See* Daubert, 509 U.S. at 588  
10 (noting that Rule 702 is part of the “liberal thrust of the Federal Rules and their  
11 general approach of relaxing the traditional barriers to opinion testimony”); *see also*,  
12 Fed. R. Evid. 702 Advisory Committee Notes to 2000 Amendments (“[R]ejection of  
13 expert testimony is the exception rather than the rule.”).

14 In applying Daubert and Kumho Tire, the Ninth Circuit has observed that  
15 “Kumho Tire heavily emphasizes that judges are entitled to broad discretion when  
16 discharging their gatekeeping function.” United States v. Hankey, 203 F.3d 1160, 1168  
17 (9th Cir. 2000). As such, “not only must the trial court be given broad discretion to  
18 decide whether to admit expert testimony, it ‘must have the same kind of latitude in  
19 deciding how to test an expert’s reliability.’” *Id.* (quoting Kumho Tire, 526 U.S. at  
20 152); *see also*, Valencia-Lopez, 971 F.3d at 898 (“The reliability inquiry is a flexible  
21 one, and the district court has broad latitude to determine what factors in Daubert, if  
22 any, are relevant to the reliability determination.”) (internal quotations and citation  
23 omitted); United States v. Ruvalcaba-Garcia, 923 F.3d 1183, 1189 (9th Cir. 2019) (“The  
24 reliability analysis is a malleable one tied to the facts of each case, and district courts  
25 are vested with broad latitude to decide how to test an expert’s reliability and whether  
26 or not an expert’s relevant testimony is reliable.” (internal quotations and citation  
27 omitted). “Relevancy simply requires that ‘[t]he evidence . . . logically advance a  
28 material aspect of the party’s case.’” Daubert, 509 U.S. at 597 (alterations in original)

1 [quoting Cooper v. Brown, 510 F.3d 870, 942 (9th Cir. 2007)]. And “[t]he focus, of  
2 course, must be solely on principles and methodology, not on the conclusions that they  
3 generate.” Daubert, 509 U.S. at 595; *see also*, Primiano v. Cook, 598 F.3d 558, 564 (9th  
4 Cir. 2010).

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6 C. The Evidence At The *Daubert* Hearing Established That Mr. Vines Is A  
7 Qualified DNA Expert And That The *Daubert* Factors Have Been  
8 Satisfied To Admit His Expert Testimony At Trial

9  
10 1. Mr. Vines Is Qualified As An Expert In DNA Analysis, Including  
11 DNA Analysis That Utilizes The STRmix Methodology

12 The Vines Declaration, which includes his Curriculum Vitae attached as Exhibit  
13 A, provides detailed information regarding Mr. Vines’ training and experience in the  
14 field of DNA analysis. In addition to explaining Mr. Vines’ education in the field, the  
15 Vines Declaration explains the operation of his DNA laboratory, Pure Gold Forensics  
16 (“PGF”), at which he serves as Technical Leader, which has received multiple  
17 professional accreditations, as well as the lab’s client base which includes federal law  
18 enforcement, specifically the FBI.<sup>1</sup> The Vines Declaration further explains in detail the  
19 resources acquired by PGF for utilization during DNA testing and in connection with  
20 its internal validation procedures, specifically the Globalfiler Amplification Kit.<sup>2</sup>

21 During the *Daubert* hearing, Mr. Vines explained details about his educational  
22 background and specifically, his training in the STRmix methodology of DNA testing.<sup>3</sup>  
23 He also explained details about the operation of PGF, including the STRmix protocols  
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26 <sup>1</sup> Vines Declaration at pars. 2 - 13.

27 <sup>2</sup> Vines Declaration at pars. 14 - 15.

28 <sup>3</sup> Reporter’s Transcript for 09-15-2022, hereafter “RT 09-15”, at pages 13 - 18.

utilized by PGF<sup>4</sup> and PGF's accreditations which included the lab's compliance with FBI Quality Assurance Standards for 2020<sup>5</sup> and standards promulgated by the Scientific Working Group On DNA Analysis Methods, commonly known by the acronym SWGDAM.<sup>6</sup>

In addition, Section H of the Vines Declaration ("PGF's Utilization Of The STRmix Methodology") And Section I ("Explanation Of The STRmix Methodology") amply establish the qualifications of PGF as a laboratory and Mr. Vines as its Technical Leader, to utilize STRmix in conducting DNA testing. Section H provides detail regarding the internal validation procedures for STRmix that were put in place at PGF with assistance from the developers of STRmix who are based in New Zealand and who provided consultation to ensure technically correct implementation.<sup>7</sup> Section I sets forth in detail the analytical principles underlying STRmix which provide guidance in understanding terms and calculations in the reports Mr. Vines issued in this case.<sup>8</sup>

Taken together, the direct testimony set forth in the Vines Declaration, including the attached exhibits, and testimony at the hearing amply establish that Mr. Vines qualifies as a DNA expert under the *Daubert* standards.

## 2. The Reliability Of STRmix As A Methodology For DNA Testing Has Not Been Challenged By The Government

As discussed above, one of the Daubert factors is whether the methods and

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<sup>4</sup> RT 09-15 at pages 20-21.

<sup>5</sup> RT 09-15 at pages 22-25.

<sup>6</sup> RT 09-15 at pages 24 - 25.

<sup>7</sup> Vines Declaration at pars. 22 - 32; Reporter's Transcript for 09-20-2022, hereafter "RT 09-20", at page 165

<sup>8</sup> Vines Declaration at pars. 33 - 38.

1 principles employed by an expert are reliable. Daubert, 509 U.S. at 592-94; Kumho  
2 Tire, 526 U.S. at 149-50. In this case, the DNA testing methodology utilized by Mr.  
3 Vines, STRmix, has not been challenged by the government. At the outset of the  
4 September 15 hearing, government counsel explained that the government's focus is  
5 not on STRmix itself as a science, but its application in this case:<sup>9</sup>

6 MR. ANDREWS: Your Honor, in terms of qualifications, I  
7 think what we have to focus on is mostly -- is totally Mr.  
8 Vines's use of STRmix in this matter. It is certainly a new  
9 technology applied by Mr. Vines with this case, and we  
10 certainly have a lot of questions as to the depth and breadth  
11 of his understanding of the nuances of that program. So I  
12 don't think that question is resolved simply by his resume  
13 alone.

14 THE COURT: Okay.

15 MR. ANDREWS: And with respect to STRmix, this is really  
16 an as-applied challenge. I think there is an open question  
17 here what the outer limits of the reliability of this system,  
18 STRmix system, for this case are. And we believe that these  
19 results lie outside the bounds of what's reliable for this  
20 system. And that's really what we're going to be focused on  
21 in questioning Mr. Vines.

22 THE COURT: All right. Thank you.

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28 <sup>9</sup> RT 09-15 at pages 7 - 8.

3. **The Evidence Has Established That Mr. Vines Applied The STRmix In A Reliable Manner In Conducting Tests In This Case**

The Vines Declaration explains that Mr. Vines conducted DNA testing of specific items of evidence at two different points in time, each time employing the STRmix methodology: first, an analysis of two baggies as to which Mr. Vines conducted swabs of the baggies at the DEA lab in Vista, CA, in March 2021. After conducting a DNA analysis of the baggies using a manual interpretation method for which he issued a report in April 2021, Mr. Vines conducted a follow-up analysis using STRmix for which he issued a report in September 2021.<sup>10</sup> Second, Mr. Vines conducted an analysis of multiple items of evidence seized from an apartment utilizing STRmix, for which he conducted swabs at the DEA-Vista lab in April 2022 and issued a report in May 2022.<sup>11</sup>

In an effort to show that Mr. Vines' use of STRmix in this case did not meet the reliability standard required under *Daubert*, government counsel elected to challenge the sufficiency of the quantity and quality of the DNA being tested. Counsel probed for hours into the minutiae of how Mr. Vines applied STRmix to the data from the samples he collected, covering a wide range of subject areas and calculations that included, among others: contamination;<sup>12</sup> degradation;<sup>13</sup> picograms;<sup>14</sup> capillary

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<sup>10</sup> Vines Declaration at pars. 18 - 21; 39 - 43.

<sup>11</sup> Vines Declaration at pars. 44 - 46. RT 09-15 at page 25 (collection of swabs).

<sup>12</sup> RT 09-15 at page 28.

<sup>13</sup> RT 09-15 at pages 35, 57.

<sup>14</sup> RT 09-15 at pages 38 - 39.



1 electrophoresis;<sup>15</sup> electropherogram;<sup>16</sup> RFU;<sup>17</sup> stochastic threshold;<sup>18</sup> Y Max minus Y  
2 min;<sup>19</sup> a partial profile obtained at 7 loci;<sup>20</sup> microliters of recovery;<sup>21</sup> and human DNA -  
3 nanograms per microliter.<sup>22</sup>

4 The government's efforts to challenge the adequacy of the DNA data used by  
5 Mr. Vines failed to contradict the reliability of Vines' analyses. While the government  
6 focused on the fact that Mr. Vines' tests using STRmix involved parties profiles, which  
7 consist of "anything less than 24 loci detected on the Globalfiler kit,"<sup>23</sup> Vines made it  
8 clear on redirect examination that STRmix models for partial profiles, that is,  
9 STRmix models for partial profiles, i.e., takes them into account, specifically in the  
10 coordinated use of the Globalfiler Amplification Kit which validates a partial profile at  
11 four (4) loci out of 24, a threshold that was easily exceeded by the partial profiles in  
12 this case.<sup>24</sup>

13 Moreover, on redirect examination, Mr. Vines made critical points which  
14 affirmed the sufficiency of the data and thus the reliability of his DNA analyses using  
15 STRmix. For example, he noted more than once that STRmix models for degradation;

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17 <sup>15</sup> RT 09-15 at pages 40 - 41.

18 <sup>16</sup> RT 09-15 at pages 43 - 46; 55 - 58.

19 <sup>17</sup> RT 09-15 at pages 41, 45 - 46, 52 - 58.

20 <sup>18</sup> RT 09-15 at pages 46 - 53.

21 <sup>19</sup> RT 09-15 at page 52.

22 <sup>20</sup> RT 09-15 at page 57.

23 <sup>21</sup> RT 09-20 at page 7.

24 <sup>22</sup> RT 09-20 at pages 8-9.

25 <sup>23</sup> RT 09-20 at pages 15-16.

26 <sup>24</sup> RT 09-20 at page 140; 142-143. Mr. Vines explains the concept of STRmix "models for" at  
27 pages 131-132.  
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1 partial profiles; low quality DNA; allele dropouts; probability of drop-ins; the  
2 stochastic effects; the electropherogram possibly failing to show data; and other  
3 technical considerations that the government dwelled on.<sup>25</sup> Mr. Vines emphasized:<sup>26</sup>

4  
5 It [STRmix]takes into account all of those issues. And when  
6 it does those calculations, it sets its modeling for that. All of  
7 that uncertainty, that could arise due to those problems, are  
8 calculated for.

9  
10 Mr. Vines further explained that because STRmix models for the wide range  
11 listed above that include degradation and partial profiles, the findings and conclusions  
12 set forth in his written reports would not change based on any of the issues raised by  
13 government counsel at the *Daubert* hearing.<sup>27</sup> Accordingly, the evidence at the Daubert  
14 hearing amply satisfies the *Daubert* standards to justify the admission of Mr. Vines'  
15 expert testimony at trial in regard to the DNA analyses he conducted in this case using  
16 STRmix.

## 17 II.

### 18 CONCLUSION

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20 For the reasons discussed, this Court should deny the government's motion to  
21 exclude the trial testimony of Mr. Vines.

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26 <sup>25</sup> RT 09-20 at page 131 - 133; 140 - 141; 163; 165.

27 <sup>26</sup> RT 09-20 at page 132.

28 <sup>27</sup> RT 09-20 at pages 132-133; 138; 140 - 141; 153; 166.

**DATED: November 10, 2022**

**Respectfully Submitted,**

**By: \_\_\_\_\_/S/ \_\_\_\_\_**

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